an end effector attached to the distalmost link and being rotatable about an end effector axis;

a motor connected to rotate the end effector about the end effector axis to thereby provide a yaw motion of the end effector which is independent of a motion of the at least two links; and

means for monitoring and controlling the θ, R, and yaw motion to move an end effector characteristic point in an arbitrary straight line.

16. 15
52. (New) The robotic arm structure of claim 51, wherein the means for monitoring and controlling the θ, R, and yaw motion maintains a constant orientation of the end effector.

17. 15
53. (New) The robotic arm structure of claim 51, wherein the arbitrary straight line is not restricted to a line passing through a center of the robot.

18. 15
54. (New) The robotic arm structure of claim 51, wherein the means for controlling the θ, R, and yaw motion maintains a constant orientation of the end effector which is not restricted to be parallel to the straight line in which the characteristic point of the end effector moves.

19.
55. (New) A robotic arm structure providing θ motion and R motion, comprising:

at least two links, each having a proximalmost end portion and a distalmost end portion, with the θ motion being about a primary axis at the proximal end portion of a proximalmost of the links and the R motion proceeding radially from the primary axis;

an end effector attached to the distalmost link and being rotatable about an end effector axis;

a motor connected to rotate the end effector about the end effector axis to thereby provide a yaw motion of the end effector which is independent of a motion of the at least two links; and

means for monitoring and controlling the θ, R, and yaw motion to move an end effector characteristic point in an arbitrary continuous path.

20. 19
56. (New) The robotic arm structure of claim 55, wherein the means for monitoring and controlling the θ, R, and yaw motion executes a continuous path trajectory of the end effector that results in a smooth trajectory.

21. 19
57. (New) The robotic arm structure of claim 56, wherein the means for monitoring and controlling the motion of the θ, R, and yaw motion maintains a pre-planed orientation of the end effector during the continuous path trajectory.

22. 19
58. (New) The robotic arm structure of claim 56, wherein the continuous path trajectory is not restricted to a straight line.--

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**REMARKS**

Claims 1 - 7, 31, 35, 39, 45 - 47, 49, and 51 - 58 are currently pending.

In the Advisory Action dated June 15, 1999, the Examiner has indicated that Claim 1 is not allowable because "Ueyama, et al. in Figure 14 clearly shows a two link actuator that performs non-radial motion while maintaining the orientation of the holder." Applicants respectfully disagree with the Examiner's rejection of Claim 1 as amended in the After Final Amendment filed on June 1, 1999.

Claim 1 relates to a robotic arm structure provided with yaw motion of an end effector. In particular, Claim 1 recites a means for monitoring and controlling the yaw